

CLAIMS

1. A substantially purified peptide which comprises a sequence selected from the group consisting of:
 - 5 i) an amino acid sequence as provided in SEQ ID NO:4,
 - ii) an amino acid sequence which is at least 60% identical to SEQ ID NO:4,
 - iii) an amino acid sequence as provided in SEQ ID NO:5,
 - iv) an amino acid sequence which is at least 80% identical to SEQ ID NO:5,
 - v) an amino acid sequence as provided in SEQ ID NO:48,
 - 10 vi) an amino acid sequence which is at least 70% identical to SEQ ID NO:48,
 - vii) an amino acid sequence as provided in SEQ ID NO:53,
 - viii) an amino acid sequence which is at least 70% identical to SEQ ID NO:53,
 - ix) a biologically active fragment of any one of i) to viii), and
 - x) a precursor comprising the amino acid sequence according to any one of i) to
 - 15 ix),wherein the peptide, or fragment thereof, exhibits antifungal and/or antibacterial activity.
2. The peptide of claim 1 which can be purified from an insect.
- 20 3. The peptide of claim 1 or claim 2 which can be purified from a lepidopteran insect of the family Pyralidae.
4. The peptide according to any one of claims 1 to 3, wherein the peptide exhibits
25 antifungal activity against a fungus selected from the group consisting of: *Fusarium graminearum*, *Fusarium oxysporum*, *Ascochyta rabiei*, *Candida albicans*, *C. parapsilosis*, *C. glabrata*, *C. krusei*, *C. tropicalis*, *Cryptococcus neoformans* and *Leptosphaeria maculans*.
- 30 5. The peptide according to any one of claims 1 to 4 which is fused to at least one other polypeptide/peptide sequence.
6. An isolated polynucleotide, the polynucleotide comprising a sequence selected from the group consisting of:
 - 35 i) a sequence of nucleotides provided in SEQ ID NO:9 or SEQ ID NO:10;
 - ii) a sequence of nucleotides provided in SEQ ID NO:11;

- iii) a sequence of nucleotides provided in SEQ ID NO:12;
iv) a sequence of nucleotides provided in SEQ ID NO:13;
v) a sequence of nucleotides provided in SEQ ID NO:50;
vi) a sequence of nucleotides provided in SEQ ID NO:51;
5 vii) a sequence of nucleotides provided in SEQ ID NO:55;
viii) a sequence of nucleotides provided in SEQ ID NO:56;
ix) a sequence encoding a peptide according to any one of claims 1 to 5;
x) a sequence of nucleotides which is at least 66% identical to SEQ ID NO:9,
SEQ ID NO:10, or SEQ ID NO:12;
10 xi) a sequence of nucleotides which is at least 71% identical to SEQ ID NO:11
or SEQ ID NO:13;
xii) a sequence of nucleotides which is at least 62% identical to SEQ ID NO:50,
or SEQ ID NO:51;
xiii) a sequence of nucleotides which is at least 62% identical to SEQ ID NO:55,
15 or SEQ ID NO:56; and
xiv) a sequence which hybridizes to any one of (i) to (viii) under high stringency
conditions.
7. The polynucleotide of claim 6, wherein the polynucleotide encodes a peptide
20 with antifungal and/or antibacterial activity.
8. A vector comprising the polynucleotide of claim 6 or claim 7.
9. A host cell comprising the polynucleotide of claim 6 or claim 7, or the vector of
25 claim 8.
10. The host cell of claim 9 which is a plant cell.
11. A process for preparing a peptide according to any one of claims 1 to 5, the
30 process comprising cultivating a host cell according to claim 9 or claim 10 under
conditions which allow expression of the polynucleotide encoding the peptide, and
recovering the expressed peptide.
12. A composition comprising a peptide according to any one of claims 1 to 5, and
35 one or more acceptable carriers.

13. A composition comprising a polynucleotide according to claim 6 or claim 7, and one or more acceptable carriers.
14. A method for killing, or inhibiting the growth and/or reproduction of a fungus and/or a bacteria, the method comprising exposing the fungus and/or bacteria to a peptide according to any one of claims 1 to 5.
15. A transgenic plant, the plant having been transformed with a polynucleotide according to claim 6 or claim 7, wherein the plant produces a peptide according to any one of claims 1 to 5.
16. A method of controlling fungal and/or bacterial infections of a crop, the method comprising cultivating a crop of transgenic plants of claim 15.
17. A transgenic non-human animal, the animal having been transformed with a polynucleotide according to claim 6 or claim 7, wherein the animal produces a peptide according to any one of claims 1 to 5.
18. A method of treating or preventing a fungal and/or bacterial infection in a patient, the method comprising administering to the patient a peptide according to any one of claims 1 to 5.
19. Use of a peptide according to any one of claims 1 to 5 for the manufacture of a medicament for treating or preventing a fungal and/or bacterial infection in a patient.
20. An antibody which specifically binds a peptide according to any one of claims 1 to 5.
21. A method for killing, or inhibiting the growth and/or reproduction of a fungus, the method comprising exposing the fungus to a peptide which comprises a sequence selected from the group consisting of:
- i) an amino acid sequence comprising residues 25 to 67 of SEQ ID NO:14,
 - ii) an amino acid sequence as provided in SEQ ID NO:17,
 - iii) an amino acid sequence comprising residues 26 to 67 of SEQ ID NO:15,
 - iv) an amino acid sequence which is at least 75% identical to any one of i) to iii),

- v) an amino acid sequence comprising residues 26 to 66 of SEQ ID NO:18,
- vi) an amino acid sequence which is at least 50% identical to v), and
- vii) a biologically active fragment of any one of i) to vi).

5 22. The method of claim 21, wherein the peptide comprises a sequence selected from the group consisting of:

- i) an amino acid sequence comprising residues 26 to 66 of SEQ ID NO:18,
- ii) an amino acid sequence which is at least 50% identical to i), and
- 10 iii) a biologically active fragment of i) or ii).

23. A method of controlling fungal infections of a crop, the method comprising cultivating a crop of transgenic plants which produce a peptide which comprises a sequence selected from the group consisting of:

- i) an amino acid sequence comprising residues 25 to 67 of SEQ ID NO:14,
- 15 ii) an amino acid sequence comprising residues 25 to 66 of SEQ ID NO:16,
- iii) an amino acid sequence as provided in SEQ ID NO:17,
- iv) an amino acid sequence comprising residues 26 to 67 of SEQ ID NO:15,
- v) an amino acid sequence which is at least 75% identical to any one of i) to iv),
- vi) an amino acid sequence comprising residues 26 to 66 of SEQ ID NO:18,
- 20 vii) an amino acid sequence which is at least 50% identical to vi), and
- viii) a biologically active fragment of any one of i) to vii).

24. The method of claim 23, wherein the peptide comprises a sequence selected from the group consisting of:

- 25 i) an amino acid sequence comprising residues 26 to 66 of SEQ ID NO:18,
- ii) an amino acid sequence which is at least 50% identical to i), and
- iii) a biologically active fragment of i) or ii).

25. A method of treating or preventing a fungal infection in a patient, the method comprising administering to the patient a peptide which comprises a sequence selected from the group consisting of:

- i) an amino acid sequence comprising residues 25 to 67 of SEQ ID NO:14,
- ii) an amino acid sequence as provided in SEQ ID NO:17,
- iii) an amino acid sequence comprising residues 26 to 67 of SEQ ID NO:15,
- 35 iv) an amino acid sequence which is at least 75% identical to any one of i) to iii),

- v) an amino acid sequence comprising residues 26 to 66 of SEQ ID NO:18,
- vi) an amino acid sequence which is at least 50% identical to v), and
- vii) a biologically active fragment of any one of i) to vi).

- 5 26. Use of a peptide which comprises a sequence selected from the group consisting of:
- i) an amino acid sequence comprising residues 25 to 67 of SEQ ID NO:14,
 - ii) an amino acid sequence as provided in SEQ ID NO:17,
 - 10 iii) an amino acid sequence comprising residues 26 to 67 of SEQ ID NO:15,
 - iv) an amino acid sequence which is at least 75% identical to any one of i) to iii),
 - v) an amino acid sequence comprising residues 26 to 66 of SEQ ID NO:18,
 - vi) an amino acid sequence which is at least 50% identical to v), and
 - vii) a biologically active fragment of any one of i) to vi)
- 15 for the manufacture of a medicament for treating or preventing a fungal infection in a patient.
27. A kit comprising a peptide according to any one of claims 1 to 5.